Driving Construction Value and Efficiency Through Effective Asset Management.

Yard Management 2.0
Speaker Information

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University of Waterloo
IDENTEC SOLUTIONS is the global leader in active RFID solutions. We enable business process optimization in areas such as construction, logistics, healthcare, manufacturing and people tracking. Visibility Delivered.

We focus on:

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AUTOMOTIVE
Oil, Gas & Mining

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“InSync provides software solutions that leverage RFID, GPS and sensor technologies to locate and track assets, improve operational efficiencies, and manage risks.”
Yard Management Webinar Agenda

- **Conference Introduction**
  Mark Roberti, RFID Journal

- **Research Overview**
  Dr. Carl Haas, University of Waterloo

- **Construction Yard Management & Asset Tracking; Application Introduction**
  Dave Lambacher
  Leif Chastaine

- **Q&A Session**
Construction Industry Institute (CII) and FIATECH Research Team

- Ron Bond, Tennessee Valley Authority
  - Co-Chair
- Shrikant Dixit, Bechtel, Co-Chair
- Mike Alianza, Intel, Former Co-Chair
- Sergio Arantes, Petrobras
- Carlos Caldas, University of Texas
- Robert Chapman, NIST
- Steven Davis, WorleyParsons
- Paul Goodrum, University of Kentucky
- Carl Haas, University of Waterloo
- David Heaton, CCC Group
- Leandro Iglezias, Petrobras
- Ric Jackson (ex-officio), FIATECH
- Sylvia Kendra, Smithsonian Institution
- Victor Puccio, Washington Group
- Sean Rooney, Fluor, Former Co-Chair
- Thomas Royster, J. Ray McDermott
- Kamel Saidi, NIST
- Brian Schmuecker, U.S. Dept of State
- Wayne Sykes, Aker Kvaerner
- George Stevenson, Bechtel
- Steve Thomas (ex-officio), CII
- Todd Vanderhaak, Nielsen-Wurster Group
Other Participants

- **Student Members**
  - Laura Games
  - David Grau
  - Jie Gong
  - Hassan Nassir
  - Saiedeh Razavi
  - Duncan Young
  - Jordan Yeizer
  - Dong Zhai

- **Identec**
- **Rockdale Project**
- **Portlands Project**
Research Problem Statement

construction underutilizes technological advancements at its disposal

construction productivity has been declining since the 1960s

field materials management is one of the most significant factors currently impacting construction productivity among. CII member companies (Research Team 215)

field materials management as a work operation has significant potential to be positively impacted by new technology (Research Team 173)
Problem: Site Materials Tracking on Large industrial projects

Typical Characteristics

- Thousands of engineered components
- Long storage periods
- Material movement
- Sequenced erection
- Remote yards
- Inclement weather
Rockdale Field Trial (i)

The project:
- 565 MWatts power plant (Bechtel site), Rockdale, TX
- $750 million
- Open shop / direct hire
- Two identical boiler-support steel structures
Field Trial Methodology

MANUAL TRACKING PROCESS
BOILER A

- LAY DOWN YARD
- COLLECT RECORDS
- INSTALLATION AREA

AUTOMATED TRACKING PROCESS
BOILER B

- LAY DOWN YARD
- COLLECT RECORDS
- INSTALLATION AREA

COMPARE

400 STEEL COMPONENTS FROM IDENTICAL INSTALLATION SEQUENCES
Lay Down Yard

- Storage of pre-fabricated components
- 25 acres lay down yard
- Divided in smaller grids of 50ftx100ft
- Posts uniquely marked the center of each grid for worker navigation purposes
Installation Area

- Pre-assembly and installation of steel components
- Small, crowded, dynamic
- Minimal storage capacity
Portlands Energy Center

- Partnership between OPG and Transcanada Energy
- 550 megawatt, natural gas fired, combined cycle, generation facility
- Union labor
Portlands Field Trial

Focus on tracking the following components:

- 224 pipe spools
- 22 safety valves
- 100 globe valves
Yard Management Solution Addresses the Following

- Yard check-in/check-out of assets
- RFID tagging of inventory
- Creation and dissemination of pick lists
- GPS and grid-based location of assets
- Inventory location and reporting
- Project and work order integration to authorize yard activity
- Automated eBusiness transactions for partners and customs
- Time and Geo based alerts

Active RFID Tagging

Automated Check-in/out

Grid-based Location
Yard Management Solution Features
Automating Receipts

- A single reader creates a portal
- Everything on the truck is identified upon arrival
Yard Management Solution Features – Check in/Out

- Handheld based Item association
- Quickly associate RF tags w/ Assets
- Unsurpassed accuracy
- Validation asset quantity with purchased quantities
Yard Management Features – Locating a Tagged Asset

- Traditional location methods require flagging
- Traditional location methods are time consuming and labor intensive
- Safety always a paramount concern
Yard Management Features – Locating a Tagged Asset

- Arrow points toward tag when device is moving, until device is within the radius of location accuracy
- Graph displays signal strength of last five tag readings
- Audible beeps increase in frequency as signal strength increases
- i-Q tags will flash their LED
- Map display shows red dots for locations of tags selected and a moving blue dot for the current device location
- Clicking on a red dot displays tag ID
Yard Management Features – Locating “Tricky” Assets

- Traditionally location methods are not always effective
- Environment often creates obstacles for locating assets
- With RFID-based solution environment conditions are not an issue
- System reads through dirt, snow, vegetation and more.
Yard Management Solution – Deployment Options

- Flexible deployment options
Yard management Solution – Meeting Organizational Needs

- Item Search
- Item Locate
- Direction finding tools
- Transaction Support
  - Check in, check out, Pick
- Item Aggregation and Detail
- Detailed Sensor Data
- Project Time fencing
- Filer, Sort, Report

Field Based Users  Corporate Users
Yard Management Features – Dashboard Layout

- Satellite imagery is overlaid with dimensional drawings to provide visual reference and coordinates.
- Search box allows for specific location, or entire network searches by product, maintenance schedule, job and more.
- Charts display real-time asset inventories, conditions and maintenance schedules for each location.
- The Movement Trace feature displays real-time movements of equipment, personnel and supplies.
Yard Management Features – System Configuration

Hierarchical organizational structure enables both data roll up and aggregation as well as visibility into detail.

The mapping tool supports images allowing users to map new/Greenfield sites.

Process zones are used to create read zones, check-in and check-out processes as well as user defined process functions.

Image calibration enables X/Y/Z or Latitude/Longitude positioning. The Mapping tool supports region/zone definitions that can be used in geo or time based rules.
Demo Walk Through
Yard Management Solution Delivers the Following

- Improved asset visibility and automation
- Reduction in shrinkage and waste
- Increased service levels with lower inventory carrying costs
- Reduced time to locate assets

Real-Time Visual Location

Asset Histories and Maintenance Schedules

Process and Material Optimization
Yard Management Webinar – Questions?

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